



### Homework 1 Arrays, tuples and records

- Trace through the following pseudocode and complete the trace table below.

```

maxAge = 0
array ageList[4]
for index = 0 to 3
    ageList[index] = input ()
    if ageList[index] > maxAge then
        maxAge = ageList[index]
        position = index
    endif
next index
print (AgeList[position], position)
    
```

Test Data 12, 16, 17, 11

	ageList						
index	0	1	2	3	maxAge	position	Output
					0		

[4]

- A teacher uses a program to store an array of 20 pupils pupil[0:19] she would like to sort them into two groups for a group activity. Write a pseudocode algorithm that will read the 20 names and then output lists consisting of every other pupil.

Example: GROUP 1  
 pupil1  
 pupil3  
 pupil5  
  
 GROUP 2  
 pupil2  
 pupil4  
 pupil6

[5]



3. (a) The results of an Athletics event involving several schools are recorded. An array **school[0:3]** holds the names of the 4 schools participating. A second array **medal[0:3]** holds the number of medals that each school has won. This array is updated each time a new result is announced.

For test purposes, the names of the schools are recorded as AAAA, BBBB, CCCC, DDDD. The medal array is pre-loaded with results [4,7,1,3], meaning that school AAAA has 4 medals, BBBB has 7 medals, etc.

Each time a new result comes in, the user enters the result. They are prompted to enter the school number (1 for AAAA, 2 for BBBB etc.) and the medal array is updated.

When the user enters -1 for the school number, the results are printed in the form

**School number nn School name XXXX Number of medals nn**

Complete the pseudocode for this program. Include validation to ensure that a valid school number is entered. [8]

```
school = ["AAAA", "BBBB", "CCCC", "DDDD"]
```

```
medal = [4,7,1,3]
```

- (b) It is possible to have an n-dimensional array holding a set of elements of the same type. Give an example of a program where it might be useful to use a multi-dimensional array. How many dimensions would this array need? [2]
- (c) Give **one** difference between the data structures **array** and **tuple**. [1]

[Total 20 Marks]